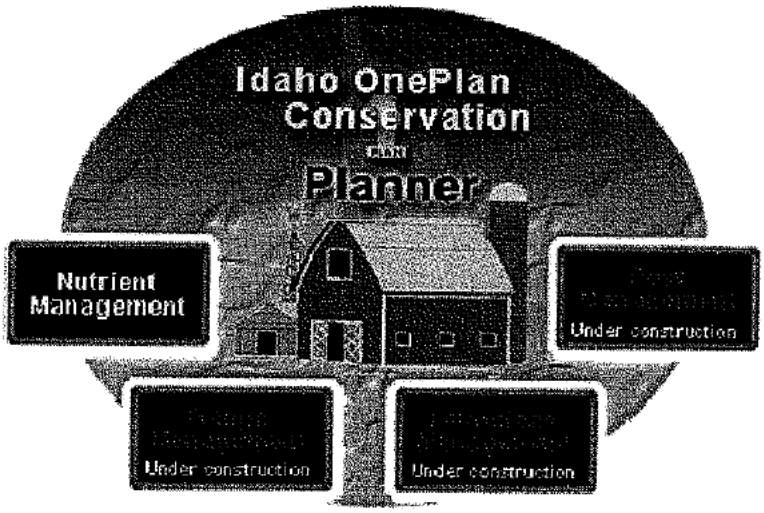
DRAFT

Rim Fire Ranch
Nutrient Management Plan

Agriculture . . .

Launching into the Future



Nutrient Management Plan Prepared For:
Curtis Yett
(b) (6)
Rim Fire Ranch

Certified Planner:
Chase Dryden
Resource Technician, ISDA
(208) 332-8527

Producer Signature:		
Certified Planner Signature:		

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Facility Information Sheet

Dairy Information

Facility Name Facility Address	Rim Fire Ranch 5888 Sandy Ave, Emmett, ID 83617		
Operator Information Mailing Address	Curtis Yett (b) (6) [redacted]	Home Phone Barn Phone Cell Phone	 (b) (6) [redacted]
Manager Information Manager Address		Home Phone Cell Phone	
County	Gem		
GPS	Lat. 43 57' 09.20"N	Lon. 116 39' 06.89"W	

Resource Concerns

Resource Concern:	Surface Water + Ground Water
Soil Conservation District:	Gem
Watershed Basin:	Payette River
Hydrologic Unit Code:	17050122
Stream Segment:	Black Canyon Dam to Snake River

Animal Class

	Milking	Dry	Heifers	Calves
Total Number of Animals on Facility	1700	300	2000	0
Weight	1,000	1,000	750	0
Housing	Open Lot	Open Lot	Open Lot	0
Bedding	Long Straw	Long Straw	Long Straw	0

Total Animal Units on Facility	3,500
Total Acres Available for Nutrients Owned by the Facility	200.9
Total Acres Available for 3rd Party Export	500+

Storage Summary

Required Storage	377,053 ft3
Available Storage	523,715 ft3*

** Lagoon storage calculations based on estimated liquid waste containment volume. As-built containment volume pending approval inspection by ISDA.*

Container Name	Volume (ft3)	Storage Period (Days)	Length	Width	Depth	Slope	Diameter	Existing	Proposed
Lagoon 1	502,440.0	180	420.0	120.0	16.0	2.0	0.0	No	Yes
Mixing Pond	21,275.0	180	98.0	53.0	9.0	2.0	0.0	No	Yes

Nutrient Distribution on Facility

	Pounds N	Pounds P_2O_5	Pounds K_2O	% of Total	Weight (in Tons)
Total Nutrients Produced	313,625	249,200	342,096	---	---
Pasture(s)	0	0	0	0	0
Separated Solid(s)	0	0	0	0	0
Solid Stack(s)	308,599	240,398	329,609	97	50,084
Waste Storage Pond(s)	5,026	8,802	12,487	3	1,709
Nutrients Exported	287,807	224,201	307,401	91	
Nutrients Onsite	25,818	24,999	34,695	9	

Exported Bio-Nutrient Summary					
Bio-Nutrient Group Name	**Amount**	**Consumer**	**Consumer's Address**	**Telephone**	**Acres**
Solid Stack(s)	10412	Rosti Farms	Silverleaf & Upper Ave.,Emmett,ID,83617		500
Solid Stack(s)	36297.5	Remaining export pending producer contact	,,,		1743

Planner Information

Planner Name:	Chase Dryden
Planner Address:	2270 Old Penitentiary Rd. Boise, ID 83701
Planner Phone Number: Office: Cell: Fax:	 (208) 332-8527 (208) 469-0732
Planner Certification #:	1041

PRODUCER SUMMARY

Facility Summary

The Rim Fire Ranch Dairy facility is located at 5888 Sandy Ave. north of Emmett, ID 83617 and is currently undergoing expansion to accommodate additional livestock. The expanded facility is owned by Terry Jones and will be leased and operated by Curtis Yett. Cows will initially be milked twice per day in a newly constructed double 14 parallel milking parlor, the milk from the parlor being cooled by a fresh water plate cooler and a glycol pre-chiller prior to entering the bulk tanks. One 5,000 gallon bulk tank and one 2,000 gallon bulk tank already existing on site will store milk until daily pickup by milk hauler. Water from the plate cooler will be stored within a 7,000 gallon storage tank prior to being distributed throughout corrals as livestock water. The facility will also have the ability to utilize the stored plate cooler water as cleaning water for the parlor if necessary.

The expanded dairy herd will eventually consist of 2,000 mature Jersey cross cows and 2,000 replacement heifers of all ages. Livestock will be housed in open lots and bedded with long straw during winter months as necessary. Lots housing mature cows will be graded westward, the feed alleys and holding pen being scraped into the waste containment system. The heifer lot will slope to the south, any lot runoff being contained within Lagoon 1.

The producer maintains plans for a two phase expansion of the facility, increasing the dairy herd initially in the first phase to 1,000 head of mature cows and 500 replacement heifers. The second phase expansion will be constructed to accommodate 2,000 head of mature livestock and 2,000 replacement heifers. This OnePlan NMP is being written to reflect the proposed facility operating upon completion of the second phase of construction in order to reflect necessary containment infrastructure, bio-nutrient application practices, and necessary additional acreage for exporting bio-nutrients from the facility. The producer plans to construct waste containment infrastructure necessary for the second phase expansion during the first phase to prevent additional alterations to the system upon completion of the final facility.

Resource Concerns

Rim Fire Ranch Dairy is located within the southwest hydrologic unit code #17050122 and the Payette River watershed basin Black Canyon Dam to Snake River stream segment. Fields owned and operated by Rim Fire Ranch exhibit both Surface Water and Ground Water resource concerns. Fields featuring Surface Water Concerns include: Cottonwood, Rabbit, Pheasant, Skunk, Snake, Upper Turkey, and Lower Turkey. Ground Water resource concern is present in the 40 acre Pivot field due to sandy soil conditions, pivot application of liquid wastes, and berming constructed along the down slope edge of the field to prevent potential runoff from occurring. No shallow or perched water tables exist within the Pivot field.

A seasonal drainage is present through farm ground owned by Rim Fire Ranch. A culvert located under the irrigation canal up slope from the facility allows the natural drainage basin north of the facility to flow through the property. The producer has diverted the seasonal flow channel away from the dairy to separate it from coming into contact with the facility or waste containment system.

Waste Storage & Handling

Liquid wastes and process waters from the dairy will be contained within two reconstructed earthen lagoons for storage prior to field application through irrigation equipment. Lagoon 1 will receive liquid wastes from open lots, feed alleys, holding pen, and the milking parlor. Continual routine maintenance and cleaning of the lagoon will prevent excess sludge accumulation. Outflow from Lagoon 1 will enter the Mixing Pond. An existing screened inlet at the bottom of the Mixing Pond structure leads to a pump, which intakes effluent water and mixes in tail water from adjacent fields, diluting the effluent for field application. The pump is protected by a check valve on the tail water inlet to prevent liquid wastes from discharging into the tail water pond. The pump lifts the diluted effluent water to distribute the liquids through gated pipeline and a newly installed center pivot for field nutrient application during the application season. Solid wastes generated by the facility will be stockpiled in mounds until being applied to fields and exported to area farmers listed within this OnePlan NMP. Solid stack manure applied to farm ground owned by the facility will be rapidly incorporated in order to conserve nitrogen and prevent additional risk of surface runoff discharge from fields.

***Note:** Containment lagoons are listed as proposed structures within this OnePlan NMP. Upon completion of the liquid waste containment structures' reconstruction, ISDA staff will conduct an approval inspection. The nutrient management plan will be corrected to show the structures as existing upon approval by ISDA.

Hydraulic Balance
Liquid Waste applications are to begin and end within the growing period of the active crop. Fall application of liquid effluent must be completed prior to November 15th. Applying waste outside the annual application window may be allowed upon Idaho State Department of Agriculture approval, however no applications will be permitted on frozen or snow covered ground. You must contact the Department of Agriculture, Dairy Bureau at (208) 332-8550 prior to any wastewater application outside of the application season. The need for wastewater application outside of the irrigation season will be evaluated on a case by case basis. Factors considered in granting approval will be, but are not limited to, the following:

- Date
- Existing and forecasted weather conditions
- Moisture content of the soil
- Water holding capacity of the soil
- Frost layers in the soil
- Crop needs

Nutrient Management Plan Requirements
The producer shall maintain field level records for a minimum of five years, making them available for review upon routine reviews and inspections by ISDA personnel. Records must include the following:

- **Soil tests:** The producer must soil test all fields to which nutrients (commercial fertilizer or manure) will be applied that year. Soil samples must be pulled by an ISDA certified soil sampler. If nutrients are not applied to a field, a test will not be required that year. Soil tests will however, be required prior to any future nutrient application. These soil tests should be taken from 0-12 inches and should be used to develop the annual nutrient budget for each field.
    - Fields classified as surface water concerns will be tested annually at 0"-12" soil depth. The phosphorus threshold for surface water concerns are 40 parts per million (ppm). In the event phosphorus tests exceed 40 ppm, the producer shall not apply phosphorus (commercial fertilizer or manure) in excess of the estimated annual crop phosphorus uptake.
    - Fields classified as groundwater concerns will be tested at a minimum of every five years at 18"-24" soil depth. The phosphorus threshold for groundwater concerns is 20 or 30 ppm (depending on soil depth). In the event phosphorus tests exceed 20 or 30 ppm, the producer shall not apply phosphorus (commercial fertilizer or manure) in excess of the estimated annual crop phosphorus uptake.
- Nutrient (manure and commercial fertilizer) applications: Include the following:
    - Nutrient type
    - Date
    - Amount
    - Application method
- Exported manure:
    - Name & contact information of person receiving the manure
    - Type & quantity of the manure
    - Date manure was exported

Farm Location

Idaho Transverse Mercator

Coordinates of the farm center (meters): X = 2287244.60295382, Y = 1420351.94963046

Map Scale: 1 : 201

Figure 1. Base Map

Farm Location

Idaho Transverse Mercator

Coordinates of the farm center (meters): X = 2287244.60295382, Y = 1420351.94963046

Map Scale: Unknown

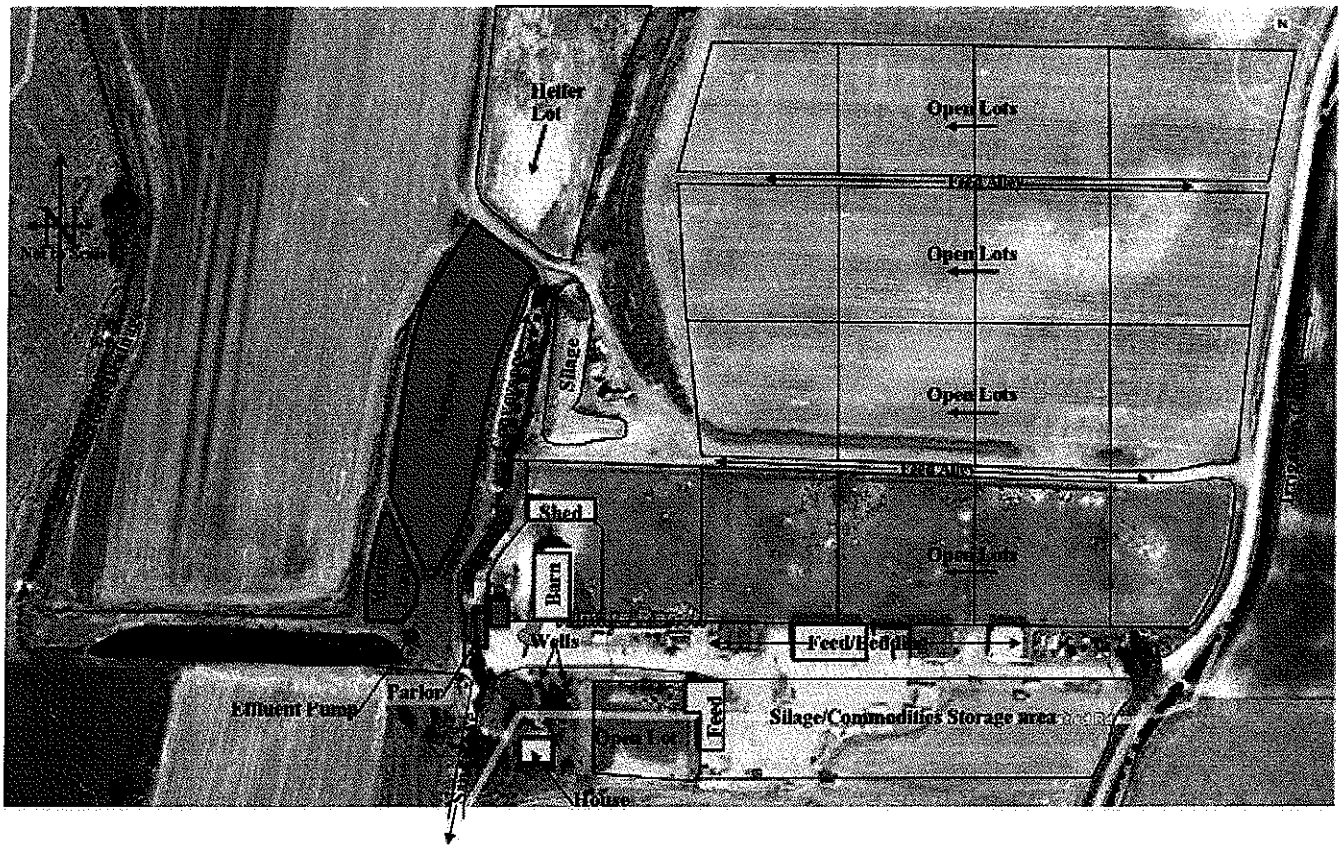

Figure 2. Farmstead Map

Manure Application Rate Requirement By Year

FIELD: Cottonwood 39 acres

Name	Man App		Solid Stack(s)	Mineralization		Total	
Corn-Field, Silage, Irrigated(2010)	Y		29 T/ac				
		N	85	N	0	N	85
		P	145			P	145
		K	202			K	202
Corn-Field, Silage, Irrigated(2011)	Y		29 T/ac				
		N	85	N	47	N	132
		P	145			P	145
		K	202			K	202
Corn-Field, Silage, Irrigated(2012)	Y		29 T/ac				
		N	85	N	47	N	132
		P	145			P	145
		K	202			K	202
Corn-Field, Silage, Irrigated(2013)	Y		29 T/ac				
		N	85	N	47	N	132
		P	145			P	145
		K	202			K	202
Corn-Field, Silage, Irrigated(2014)	Y		29 T/ac				
		N	85	N	47	N	132
		P	145			P	145
		K	202			K	202
Corn-Field, Silage, Irrigated(2015)	Y		29 T/ac				
		N	85	N	47	N	132
		P	145			P	145
		K	202			K	202

FIELD: Lower Turkey 12 acres

Name	Man App		Solid Stack(s)	Mineralization		Total	
Alfalfa, Hay, Cut Early Bloom, Irrigated(2010)	Y		17 T/ac				
		N	48	N	0	N	48
		P	83			P	83
		K	115			K	115
Alfalfa, Hay, Cut Early Bloom, Irrigated(2011)	Y		17 T/ac				
		N	48	N	27	N	75
		P	83			P	83
		K	115			K	115
Corn-Field, Silage, Irrigated(2012)	Y		17 T/ac				
		N	48	N	70	N	118
		P	83			P	83
		K	115			K	115
Alfalfa, Hay, New Seeding, Irrigated(2013)	Y		17 T/ac				
		N	48	N	27	N	75

		P	83			P	83
		K	115			K	115
Alfalfa, Hay, Cut Early Bloom, Irrigated(2014)	Y		17 T/ac				
		N	48	N	27	N	75
		P	83			P	83
		K	115			K	115
Alfalfa, Hay, Cut Early Bloom, Irrigated(2015)	Y		17 T/ac				
		N	48	N	27	N	75
		P	83			P	83
		K	115			K	115

FIELD: Pheasant 14 acres

Name	Man App		Solid Stack(s)	Waste Storage Pond(s)	Mineralization		Total	
Corn-Field, Silage, Irrigated(2010)	Y		18 T/ac	18 %				
		N	51	15	N	0	N	66
		P	87	58			P	145
		K	121	82			K	203
Corn-Field, Silage, Irrigated(2011)	Y		18 T/ac	18 %				
		N	51	15	N	37	N	103
		P	87	58			P	145
		K	121	82			K	203
Corn-Field, Silage, Irrigated(2012)	Y		18 T/ac	18 %				
		N	51	15	N	37	N	103
		P	87	58			P	145
		K	121	82			K	203
Corn-Field, Silage, Irrigated(2013)	Y		18 T/ac	18 %				
		N	51	15	N	37	N	103
		P	87	58			P	145
		K	121	82			K	203
Corn-Field, Silage, Irrigated(2014)	Y		18 T/ac	18 %				
		N	51	15	N	37	N	103
		P	87	58			P	145
		K	121	82			K	203
Corn-Field, Silage, Irrigated(2015)	Y		18 T/ac	18 %				
		N	51	15	N	37	N	103
		P	87	58			P	145
		K	121	82			K	203

FIELD: Pivot 31.8 acres

Name	Man App		Solid Stack(s)	Waste Storage Pond(s)	Mineralization		Total	
Corn-Field, Silage, Irrigated(2010)	Y		29 T/ac	0 %				
		N	85	0	N	0	N	85
		P	145	0			P	145
		K	202	0			K	202
Corn-Field, Silage, Irrigated(2011)	Y		29 T/ac	0 %				

		N	85	0	N	47	N	132
		P	145	0			P	145
		K	202	0			K	202
Corn-Field, Silage, Irrigated(2012)	Y		29 T/ac	0 %				
		N	85	0	N	47	N	132
		P	145	0			P	145
		K	202	0			K	202
Corn-Field, Silage, Irrigated(2013)	Y		29 T/ac	0 %				
		N	85	0	N	47	N	132
		P	145	0			P	145
		K	202	0			K	202
Corn-Field, Silage, Irrigated(2014)	Y		29 T/ac	0 %				
		N	85	0	N	47	N	132
		P	145	0			P	145
		K	202	0			K	202
Corn-Field, Silage, Irrigated(2015)	Y		29 T/ac	0 %				
		N	85	0	N	47	N	132
		P	145	0			P	145
		K	202	0			K	202

FIELD: Rabbit 12 acres

Name	Man App		Solid Stack(s)	Mineralization		Total	
Corn-Field, Silage, Irrigated(2010)	Y		29 T/ac				
		N	85	N	0	N	85
		P	145			P	145
		K	202			K	202
Corn-Field, Silage, Irrigated(2011)	Y		29 T/ac				
		N	85	N	47	N	132
		P	145			P	145
		K	202			K	202
Corn-Field, Silage, Irrigated(2012)	Y		29 T/ac				
		N	85	N	47	N	132
		P	145			P	145
		K	202			K	202
Corn-Field, Silage, Irrigated(2013)	Y		29 T/ac				
		N	85	N	47	N	132
		P	145			P	145
		K	202			K	202
Corn-Field, Silage, Irrigated(2014)	Y		29 T/ac				
		N	85	N	47	N	132
		P	145			P	145
		K	202			K	202
Corn-Field, Silage, Irrigated(2015)	Y		29 T/ac				
		N	85	N	47	N	132
		P	145			P	145
		K	202			K	202

FIELD: Skunk 30.9 acres

Name	Man App		Solid Stack(s)	Waste Storage Pond(s)	Mineralization		Total	
Corn-Field, Silage, Irrigated(2010)	Y		0 T/ac	82 %				
		N	0	37	N	0	N	37
		P	0	145			P	145
		K	0	206			K	206
Corn-Field, Silage, Irrigated(2011)	Y		0 T/ac	82 %				
		N	0	37	N	21	N	58
		P	0	145			P	145
		K	0	206			K	206
Corn-Field, Silage, Irrigated(2012)	Y		0 T/ac	82 %				
		N	0	37	N	21	N	58
		P	0	145			P	145
		K	0	206			K	206
Corn-Field, Silage, Irrigated(2013)	Y		0 T/ac	82 %				
		N	0	37	N	21	N	58
		P	0	145			P	145
		K	0	206			K	206
Corn-Field, Silage, Irrigated(2014)	Y		0 T/ac	82 %				
		N	0	37	N	21	N	58
		P	0	145			P	145
		K	0	206			K	206
Corn-Field, Silage, Irrigated(2015)	Y		0 T/ac	82 %				
		N	0	37	N	21	N	58
		P	0	145			P	145
		K	0	206			K	206

FIELD: Snake 41 acres

Name	Man App		Solid Stack(s)	Mineralization		Total	
Wheat-Spring, Irrigated(2010)	N						
		N	N	45	N	45	
		P			P	0	
		K			K	0	
Triticale-Winter, Haylage, Double Cropped, Irrigated(2010)	Y		9 T/ac				
		N	16	N	-5	N	11
		P	45			P	45
		K	63			K	63
Wheat-Spring, Irrigated(2011)	Y		9 T/ac				
		N	11	N	41	N	52
		P	45			P	45
		K	63			K	63
Triticale-Winter, Haylage, Double Cropped, Irrigated(2011)	Y		9 T/ac				
		N	16	N	20	N	36
		P	45			P	45
		K	63			K	63

Wheat-Spring, Irrigated(2012)	Y		9 T/ac				
		N	11	N	52	N	63
		P	45			P	45
		K	63			K	63
Triticale-Winter, Haylage, Double Cropped, Irrigated(2012)	Y		9 T/ac				
		N	16	N	78	N	94
		P	45			P	45
		K	63			K	63
Wheat-Spring, Irrigated(2013)	Y		9 T/ac				
		N	11	N	67	N	78
		P	45			P	45
		K	63			K	63
Triticale-Winter, Haylage, Double Cropped, Irrigated(2013)	Y		9 T/ac				
		N	16	N	78	N	94
		P	45			P	45
		K	63			K	63
Wheat-Spring, Irrigated(2014)	Y		9 T/ac				
		N	11	N	67	N	78
		P	45			P	45
		K	63			K	63
Triticale-Winter, Haylage, Double Cropped, Irrigated(2014)	Y		9 T/ac				
		N	16	N	78	N	94
		P	45			P	45
		K	63			K	63
Wheat-Spring, Irrigated(2015)	Y		9 T/ac				
		N	11	N	67	N	78
		P	45			P	45
		K	63			K	63
Triticale-Winter, Haylage, Double Cropped, Irrigated(2015)	Y		9 T/ac				
		N	16	N	78	N	94
		P	45			P	45
		K	63			K	63

FIELD: Upper Turkey 19 acres

Name	Man App		Solid Stack(s)	Mineralization		Total	
Alfalfa, Hay, Cut Early Bloom, Irrigated(2010)	Y		17 T/ac				
		N	48	N	0	N	48
		P	83			P	83
		K	115			K	115
Alfalfa, Hay, Cut Early Bloom, Irrigated(2011)	Y		17 T/ac				
		N	48	N	27	N	75
		P	83			P	83
		K	115			K	115
Corn-Field, Silage, Irrigated(2012)	Y		17 T/ac				
		N	48	N	70	N	118
		P	83			P	83
		K	115			K	115
Alfalfa, Hay, New Seeding, Irrigated(2013)	Y		17 T/ac				
		N	48	N	27	N	75
		P	83			P	83
		K	115			K	115
Alfalfa, Hay, Cut Early Bloom, Irrigated(2014)	Y		17 T/ac				
		N	48	N	27	N	75
		P	83			P	83
		K	115			K	115
Alfalfa, Hay, Cut Early Bloom, Irrigated(2015)	Y		17 T/ac				
		N	48	N	27	N	75
		P	83			P	83
		K	115			K	115

Minimum Acres Required for Manure Application

Manure Group	Acres
Solid Stack(s)	2404
Waste Storage Pond(s)	88

The acreage in the table is based on an average crop uptake of 100 lbs P_2O_5 per acre. These acreage numbers are for estimating export acreage needed.

BIO-NUTRIENT EXPORT INFO

Exported Bio-Nutrient Summary					
Bio-Nutrient Group Name	**Amount**	**Consumer**	**Consumer's Address**	**Telephone**	**Acres**
Solid Stack(s)	10412	Rosti Farms	Silverleaf & Upper Ave.,Emmett,ID,83617		500
Solid Stack(s)	36297.5	Remaining export pending producer contact	,,,		1743

ANNUAL NUTRIENT BUDGET

The following crop nutrient budget is based on soil test data and cropping information. It is for one year for the following field and specified crop information:

Nutrient Budget Summary

Field: Cottonwood **Crop:** Corn-Field, Silage, Irrigated **Yield:** 28

	N	P205	K20
Crop Nutrient Uptake	218	145	209
Crop Nutrient Requirement	250	145	209
Nutrients From Soil	?		
from Mineralized Nitrogen	0		
from Prior Crops	0		
from Prior Bio-Nutrients	47		
from Irrigation Water	0		0
Nutrient Balance from above *	202.9	145.2	209.1
Solid Stack(s)	85	145	202
Estimated Remaining Nutrients Required *	118	0	7
Commercial Fertilizer Application	0	0	0
Final Nutrient Balance *	118	0	7

* Positive values indicate additional nutrients are required; negative values indicate a nutrient surplus

Field: Lower Turkey **Crop:** Alfalfa, Hay, Cut Early Bloom, Irrigated **Yield:** 7

	N	P205	K20
Crop Nutrient Uptake	382	66	352
Crop Nutrient Requirement	382	66	352
Nutrients From Soil	?		
from Mineralized Nitrogen	0		
from Prior Crops	0		
from Prior Bio-Nutrients	27		
from Irrigation Water	0		0
Nutrient Balance from above *	354.9	65.6	351.5
Solid Stack(s)	48	83	115
Estimated Remaining Nutrients Required *	307	-17	237
Commercial Fertilizer Application	0	0	0
Final Nutrient Balance *	307	-17	237

* Positive values indicate additional nutrients are required; negative values indicate a nutrient surplus

Field: Pheasant **Crop:** Corn-Field, Silage, Irrigated **Yield:** 28

	N	P205	K20
Crop Nutrient Uptake	218	145	209
Crop Nutrient Requirement	250	145	209
Nutrients From Soil	?		
from Mineralized Nitrogen	0		
from Prior Crops	0		
from Prior Bio-Nutrients	37		
from Irrigation Water	0		0
Nutrient Balance from above *	213.4	145.2	209.1
Solid Stack(s)	51	87	121
Waste Storage Pond(s)	15	58	82
Estimated Remaining Nutrients Required *	147	0	6
Commercial Fertilizer Application	0	0	0
Final Nutrient Balance *	147	0	6

* Positive values indicate additional nutrients are required; negative values indicate a nutrient surplus

Field: Pivot **Crop:** Corn-Field, Silage, Irrigated **Yield:** 28

	N	P205	K20
Crop Nutrient Uptake	218	145	209
Crop Nutrient Requirement	250	145	209
Nutrients From Soil	?		
from Mineralized Nitrogen	0		
from Prior Crops	0		
from Prior Bio-Nutrients	47		
from Irrigation Water	0		0
Nutrient Balance from above *	202.9	145.2	209.1
Solid Stack(s)	85	145	202
Waste Storage Pond(s)	0	0	0
Estimated Remaining Nutrients Required *	118	0	7
Commercial Fertilizer Application	0	0	0
Final Nutrient Balance *	118	0	7

* Positive values indicate additional nutrients are required; negative values indicate a nutrient surplus

Field: Rabbit **Crop:** Corn-Field, Silage, Irrigated **Yield:** 28

	N	P205	K20
Crop Nutrient Uptake	218	145	209
Crop Nutrient Requirement	250	145	209
Nutrients From Soil	?		
from Mineralized Nitrogen	0		
from Prior Crops	0		
from Prior Bio-Nutrients	47		
from Irrigation Water	0		0
Nutrient Balance from above *	202.9	145.2	209.1
Solid Stack(s)	85	145	202
Estimated Remaining Nutrients Required *	118	0	7
Commercial Fertilizer Application	0	0	0
Final Nutrient Balance *	118	0	7

* Positive values indicate additional nutrients are required; negative values indicate a nutrient surplus

Field: Skunk **Crop:** Corn-Field, Silage, Irrigated **Yield:** 28

	N	P205	K20
Crop Nutrient Uptake	218	145	209
Crop Nutrient Requirement	250	145	209
Nutrients From Soil	?		
from Mineralized Nitrogen	0		
from Prior Crops	0		
from Prior Bio-Nutrients	21		
from Irrigation Water	0		0
Nutrient Balance from above *	229.3	145.2	209.1
Solid Stack(s)	0	0	0
Waste Storage Pond(s)	37	145	206
Estimated Remaining Nutrients Required *	192	0	3
Commercial Fertilizer Application	0	0	0
Final Nutrient Balance *	192	0	3

* Positive values indicate additional nutrients are required; negative values indicate a nutrient surplus

Field: Snake **Crop:** Wheat-Spring, Irrigated **Yield:** 89

	N	P205	K20
Crop Nutrient Uptake	107	46	28
Crop Nutrient Requirement	180	46	28
Nutrients From Soil	?		
from Mineralized Nitrogen	45		
from Prior Crops	-15		
from Prior Bio-Nutrients	11		
from Irrigation Water	0		0
Nutrient Balance from above *	139.4	45.7	28.2
Solid Stack(s)	11	45	63
Estimated Remaining Nutrients Required *	128	1	-35
Commercial Fertilizer Application	0	0	0
Final Nutrient Balance *	128	1	-35

* Positive values indicate additional nutrients are required; negative values indicate a nutrient surplus

Field: Snake **Crop:** Triticale-Winter, Haylage, Double Cropped, Irrigated **Yield:** 15

	N	P205	K20
Crop Nutrient Uptake	140	45	262
Crop Nutrient Requirement	280	45	262
Nutrients From Soil	?		
from Mineralized Nitrogen	45		
from Prior Crops	-50		
from Prior Bio-Nutrients	25		
from Irrigation Water	0		0
Nutrient Balance from above *	260.4	44.8	262.1
Solid Stack(s)	16	45	63
Estimated Remaining Nutrients Required *	244	0	199
Commercial Fertilizer Application	0	0	0
Final Nutrient Balance *	244	0	199

* Positive values indicate additional nutrients are required; negative values indicate a nutrient surplus

Field: Upper Turkey **Crop:** Alfalfa, Hay, Cut Early Bloom, Irrigated **Yield:** 7

	N	P205	K20
Crop Nutrient Uptake	382	66	352
Crop Nutrient Requirement	382	66	352
Nutrients From Soil	?		
from Mineralized Nitrogen	0		
from Prior Crops	0		
from Prior Bio-Nutrients	27		
from Irrigation Water	0		0
Nutrient Balance from above *	354.9	65.6	351.5
Solid Stack(s)	48	83	115
Estimated Remaining Nutrients Required *	307	-17	237
Commercial Fertilizer Application	0	0	0
Final Nutrient Balance *	307	-17	237

* Positive values indicate additional nutrients are required; negative values indicate a nutrient surplus

ANALYSIS OF CROPPING SYSTEM

Farming Operation

Total Acres: 200.9

Crop Production History

THIS IS NOT A FERTILIZER RECOMMENDATION

Crop Rotation Name: Rotation 1

Crop	Yield	Yield Units	N Uptake	P_2O_5 Uptake	K_2O Uptake
Corn-Field, Silage, Irrigated	28	tons/acre	217.8	145.2	209.1
Corn-Field, Silage, Irrigated	28	tons/acre	217.8	145.2	209.1
Corn-Field, Silage, Irrigated	28	tons/acre	217.8	145.2	209.1
Corn-Field, Silage, Irrigated	28	tons/acre	217.8	145.2	209.1
Corn-Field, Silage, Irrigated	28	tons/acre	217.8	145.2	209.1
Average				145	

THIS IS NOT A FERTILIZER RECOMMENDATION

Crop Rotation Name: Rotation 2

Crop	Yield	Yield Units	N Uptake	P_2O_5 Uptake	K_2O Uptake
Wheat-Spring, Irrigated	89	bu/acre	106.9	45.7	28.2
Triticale-Winter, Haylage, Double Cropped, Irrigated	15	tons/acre	140.4	44.8	262.1
Wheat-Spring, Irrigated	89	bu/acre	106.9	45.7	28.2
Triticale-Winter, Haylage, Double Cropped, Irrigated	15	tons/acre	140.4	44.8	262.1
Wheat-Spring, Irrigated	89	bu/acre	106.9	45.7	28.2
Triticale-Winter, Haylage, Double Cropped, Irrigated	15	tons/acre	140.4	44.8	262.1
Wheat-Spring, Irrigated	89	bu/acre	106.9	45.7	28.2
Triticale-Winter, Haylage, Double Cropped, Irrigated	15	tons/acre	140.4	44.8	262.1
Wheat-Spring, Irrigated	89	bu/acre	106.9	45.7	28.2
Triticale-Winter, Haylage, Double Cropped, Irrigated	15	tons/acre	140.4	44.8	262.1
Average				45	

THIS IS NOT A FERTILIZER RECOMMENDATION

Crop Rotation Name: Rotation 3

Crop	Yield	Yield Units	N Uptake	P_2O_5 Uptake	K_2O Uptake
Alfalfa, Hay, Cut Early Bloom, Irrigated	7	tons/acre	381.8	65.6	351.5
Corn-Field, Silage, Irrigated	28	tons/acre	217.8	145.2	209.1
Alfalfa, Hay, New Seeding, Irrigated	7	tons/acre	351.1	71.9	266.9
Alfalfa, Hay, Cut Early Bloom, Irrigated	7	tons/acre	381.8	65.6	351.5
Alfalfa, Hay, Cut Early Bloom, Irrigated	7	tons/acre	381.8	65.6	351.5
Average				83	

Rim Fire Ranch
ANALYSIS OF RESOURCE CONCERNS

INTRODUCTION

The purpose of this nutrient management plan is to meet agricultural production goals and to certify that manure and nutrients are properly managed to minimize adverse impact to surface or groundwater. Plans are written in cooperation with the producer to:

1) Assure proper containment of animal manure and process waste water.
2) Assess resource concerns which exist on the property.
3) Budget nutrient sources to optimize crop water and nutrient needs. Nutrient sources include commercial fertilizers, animal manure, mineralization of previous crop soil organic matter, accounting of residues, and irrigation water.
4) When applicable, assess irrigation water management to minimize movement of nutrients beyond the root zone or with runoff.

If animal manure and/or commercial fertilizers are not properly managed, contaminants may negatively impact surface and/or groundwater. Some water resource contaminants associated with poorly managed animal manure and fertilizers are:

Phosphorus in the soil readily adsorbs to soil particles; thus, erosion of soil by surface runoff is the general mode of phosphorus transport. Even at very low concentrations, phosphorus can result in plant and algae blooms in surface water bodies. Alga blooms are a nuisance to boaters, irrigators, and others. Toxins released by certain algae can be lethal to livestock or other animals that drink the water. Dissolved oxygen in the water is depleted as algae die and decompose, sometimes causing fish kills.

Nitrogen in the form of nitrate (NO_3^-) is highly water-soluble and will move with water, particularly down the soil profile past the root zone if not utilized by plants (thus becoming a groundwater contamination issue).Nitrates are toxic to infants under 6 months, and to livestock at high concentrations. In surface water, excess nitrogen, like phosphorus, can result in nuisance plant and algae growth.

Organic matter in high load decreases dissolved oxygen in a surface water body when it decomposes. Low levels of dissolved oxygen is harmful or even fatal to fish and other aquatic life.

Bacteria and microorganism illnesses (pathogens) potentially transmitted through water by animal manure include Giardia, Typhoid Fever, Cryptosporidium, and Cholera. Pathogens from animal waste can negatively impact surface and groundwater quality.

ANALYSIS OF RESOURCE CONCERNS

Rim Fire Ranch is located in a watershed containing water quality limited stream segments listed according to the Clean Water Act. Stream segments are listed because a water quality parameter prevents the attainment of the "Fishable/Swimmable" goal of the Clean Water Act.

WATERBODY	BOUNDARIES	BACT	CHAN STAB	DO	FLOW ALT	HAB ALT	MET HG	MET	NH3	NUTR	O_G	ORG	PEST	PH	SAL	SED	TDG	TEMP	UNKN	*
Big Willow Cre	Rock Creek to Payette River	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	☐
Bissel Creek	Headwaters to Payette River	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	☐
Black Canyon R	N/A	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	☐
Payette River	Black Canyon Dam to Snake River	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	☑
Soldier Creek	Headwaters to Squaw Creek	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	☐

Rim Fire Ranch is not located in a critical Nitrate-Nitrogen management area . Nitrate Management Areas are designated based upon ground water quality sampling results. Two priority groups exist as follows:

Priority 1 is designated because at least 25% of the ground water sampling locations within the area exceed 5-milligrams/liter nitrate. This is one-half of the maximum contaminant level of 10-milligrams/liter nitrate. This nitrate concentration is considered evidence of significant degradation. Public drinking water systems are required to increase monitoring frequency when this level is reached.

Priority 2 is designated because at least 50% of the ground water sampling locations within the area exceed 2-milligrams/liter nitrate. This concentration threshold provides an indication of human-caused (anthropogenic) impacts. The upper limit for naturally occurring (background) concentrations of nitrate is considered to be about 2 mg/l.

Rim Fire Ranch is located in a sole source aquifer area - Western Snake River Plain Aquifer.

Field Resource Concerns

•No Resource Concerns

Field Phosphorus Threshold

Field	Resource Concern	P Threshold (ppm)	P Threshold Soil Test Depth
Cottonwood	Surface Water	40	0 - 12"
Lower Turkey	Surface Water	40	0 - 12"
Pheasant	Surface Water	40	0 - 12"
Pivot	Groundwater < 5'	20	18 - 24"
Rabbit	Surface Water	40	0 - 12"
Skunk	Surface Water	40	0 - 12"
Snake	Surface Water	40	0 - 12"
Upper Turkey	Surface Water	40	0 - 12"

Depth Limiting Subsurface Features

Field Name	Subsurface Feature	Depth from Surface (in)
Cottonwood	Water Table	>72
Lower Turkey	Cobbles	48
	Hard Pan	20
	Water Table	24
Pheasant	Water Table	>72
Pivot	Cobbles	47
	Hard Pan	20
	Water Table	>72
Rabbit	Cobbles	48
	Hard Pan	20
	Water Table	>72
Skunk	Cobbles	48
	Hard Pan	20
	Water Table	>72
Snake	Cobbles	47
	Hard Pan	20
	Water Table	>72
Upper Turkey	Cobbles	48
	Hard Pan	20
	Water Table	>72

ISDA REGULATIONS AND THE IDAHO NUTRIENT MANAGEMENT STANDARD

Nutrient management plans for animal agricultural operations regulated by the Idaho State Department of Agriculture (ISDA) must be approved by the Idaho State Department of Agriculture and must follow the Natural Resource Conservation Service (NRCS) Agriculture Waste Management Field Handbook and the Idaho Nutrient Management Standard. ISDA regulation and the Standard use soil test phosphorus as the indicator for environmental impact from agricultural production practices. The Idaho Nutrient Management Standard is based on a threshold soil test phosphorus level (TH), above which there is no agronomic advantage to application of phosphorus.

The Idaho Nutrient Management Standard categorizes fields as a surface water concern or a groundwater concern. A surface water concern indicates that runoff leaves the contiguous operating unit from normal storm events, rain on snow, frozen ground, or irrigation. The soil phosphorus threshold for a field with a surface water concern is 40 ppm phosphorus for basic soils (pH > 7) tested with the Olsen method; 60 ppm phosphorus for acidic soils (pH < 7) tested with the Bray method; and 6 ppm phosphorus for acidic soils tested with the Morgan method (0-12"Soil Sample Depth).

A groundwater resource concern indicates that runoff does not leave the contiguous operating unit from normal storm events, rain on snow, frozen ground, or irrigation. There are two sub-categories for fields identified as having a groundwater concern. The first category applies to fields with a resource concern within the first five feet of the soil profile. A resource concern could be shallow soils, gravel, cobble, bedrock, high groundwater table, or a drained field. These fields are indicated as a groundwater concern <5'. The soil phosphorus threshold for a field with a groundwater concern <5' is 20 ppm phosphorus for soils tested with the Olsen method; 25 ppm phosphorus for soils tested with the Bray method and 2.5ppm phosphorus for soils tested with the Morgan method (18-24" Soil Sample Depth).

If a field is not classified as having a surface water concern or a groundwater <5' concern, by default it is classified as having a groundwater concern >5'. The soil phosphorus threshold for a field with a groundwater concern >5' is 30 ppm phosphorus for soils tested with the Olsen method; 45 ppm phosphorus for soils tested with the Bray method; and 4.5 ppm phosphorus for soils tested with the Morgan method (18-247" Soil Sample Depth).

ANALYSIS OF ANIMAL SYSTEM

Livestock Unit Waste Characteristics

Description	Animal	Number	Average Animal Weight	Days Collected	Housing	Bedding Type	Bedding (tons)	Waste (tons)
Lactating Cows	Dairy - Lactating Cow (80 lb/d milk avg)	1,700	1,000	365	Open Lot	Long Straw	952	34,172
Dry Cows	Dairy - Dry Cow	300	1,000	365	Open Lot	Long Straw	168	2,792
Heifers	Dairy - Heifer	2,000	750	365	Open Lot	Long Straw	840	15,325

Manure/Biosolid Groups

Manure Group	Storage Type	Application Method	Days to Incorporation	Nitrogen Retention(%)	Annual Volume (ft3)	Annual Weight (tons)
Solid Stack(s)	Manure Stored in Open Lot, Arid Region	Broadcast, Incorporated deeper than 3 inches	1-3 days	51	1,610,416	50,084
Waste Storage Pond(s)	Anaerobic Lagoon	Irrigation	N/A	22	53,984	1,709

* in Nitrogen Retention % Column means "Overridden Nitrogen Values"

Manure Group		Dry Cows	Heifers	Lactating Cows
Waste Storage Pond(s)	% To Group	N/A		5
Solid Stack(s)	% To Group	100	100	95

Annual Production of Nutrients

The nutrient values were calculated based on animal weight and nitrogen loss estimates as described in the NRCS Agricultural Waste Management Field Handbook guidelines (1996). The calculations are estimates, and manure testing is recommended for more accuracy, as manure nutrient content varies widely among operations.

Dairy/Process Water Values

Gal/day

Dairy/Process Water Values			
Dairy Process Water:	1100	**Milk Parlor Cleaning Water:**	900
Dairy Parlor Water:	300	Hose Volume:	900
Bulk Tank Water:	800	Flush Volume:	0
Cow Prep Water:	510	Deck Flush Volume:	0
Automatic Backflush:	0	Other Volume:	0
Sprinkler Volume:	0	**Holding Pen Cleaning Water:**	0
Manual Cow Prep:	510	Hose Volume:	0
Dairy Equipment Water:	23721	Flush Volume:	0
Compressor Water:	0	Other Volume:	0
Vacuum Pump Water:	0	**Freestall/Alley Flush:**	0
Pre-Cooler Water:	23721	**Excess Water**	
Glycol Chiller Water:	0	Cow Water:	51000
Cow Water/Miscellaneous Water:	286	Group 1:	-27279
Washing Machine Water:	0	Group 2:	900
Cow/Miscellaneous Water:	250		
Milkhouse Water	36	**Total Dairy Water:**	**2796**

Bulk Tank(s)		
Bulk Tank ID	Size	Volume
1	5000	200
2	2000	200

Comments
Misc Equip Comments:
Calf bottle wash water

MANURE STORAGE SUMMARY

Total Annual Liquid Capacity Required				
Bio-Nutrient Group	Recommended Capacity Cubic Feet	% Contained	Storage Days	Storage Vol. Cubic Feet
Waste Storage Pond(s)	53,984	100%	180	26,622
Open Lots	293,348	100%	180	283,327
Process Water	136,072	100%	180	67,104

Total Annual Solid Capacity		
Bio-Nutrient Group	Recommended Capacity Cubic Feet	% Contained
Solid Stack(s)	1,610,416	0%
Lactating Cows	214,968	100%
Dry Cows	37,935	100%
Heifers	189,677	100%

Existing Storage Containers		
Storage Unit Name	Days Stored	No Data
No Data	No Data	No Data

New Storage Containers Required								
Storage Unit Name	Days Stored	Waste Storage Pond(s)	Solid Stack(s)	Open Lots	ProcessWater	Lactating Cows - Bedding	Dry Cows - Bedding	Heifers - Bedding
Lagoon 1	180	95%	0%	100%	95%	0%	0%	0%
Mixing Pond	180	5%	0%	0%	5%	0%	0%	0%

Container Name	Volume (ft3)	Storage Period (Days)	Length	Width	Depth	Slope	Diameter	Existing	Proposed
Lagoon 1	502,440.0	180	420.0	120.0	16.0	2.0	0.0	No	Yes
Mixing Pond	21,275.0	180	98.0	53.0	9.0	2.0	0.0	No	Yes

Note: Depth includes one foot of freeboard for liquid and slurry storage systems.

Containment of Housing Facility Waste and Corral Runoff

It is important that water from housing facilities and contaminated runoff from corrals be contained and/or diverted to the lagoon storage system. As stated in the Idaho State Department of Agriculture (ISDA) regulation, a discharge is allowed only under large precipitation events (>25yr, 24hr storm event). Lagoon structures must be properly designed, operated, and maintained to contain all barn wastewater and contaminated runoff from a 25-year, 24-hour rainfall event for the site location and maintained to contain all runoff from accumulation of winter precipitation from a one in five-year winter. Animals confined in the CAFO may not have direct contact with canals, streams, lakes, or other surface waters.

Mortality Management

Mortalities, if improperly handled, are a source of odor, rodents and other critters, potential pathogens, and nutrients. Most states have a general rule that "dead animals should not be left exposed to the environment." There are five USDA approved methods for managing mortalities: Incineration, composting, rendering, on-site burial and Value-added processing. Additionally the Idaho State Department of Agriculture has rules that govern the collection and disposal of animal mortalities. Contact the Idaho State Department of Agriculture at 208-332-8540 before finalizing your mortality plans.

Mortalities on my facility are rendered. Rendering pickup in many parts of the country is fast and reliable. Rendering provides a very low labor option for producers, however the cost of animal pickup has increased over time. Rendering also increases the risk of disease transfer if proper sanitary precautions are not made. Facilities need to be provided to house the carcasses prior to pickup and should be designed to minimize the view of neighbors and roadways, minimize vector and bird attraction, and facilitate the quick loading of dead animals. One of the limitations of traditional rendering is the decomposition and transformation of the carcass between death and processing in a rendering facility. Several local locations have encouraged producers to use on-site preservation methods to ensure the quality of the carcass protein that is delivered to the plant. In some of these instances producers can potentially receive payments from the rendering facility.

Mortalities on my facility are buried. A burial trench is the most convenient and inexpensive to maintain. Once a trench is opened, carcasses are placed and covered immediately. Leaving carcasses open to the air may lead to the spread of diseases and will attract birds and other vectors. Trenches are easily maintained in good weather, but are easily hampered by seasonal rains and freezing conditions.